

Written Reply

To Commissioner of Japanese Patent Office

1. Identification of International Application:
PCT/JP2004/019191

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5. Contents of Reply

(1) Circumstances and Outline of the Reply

A PCT Written Opinion, dated December 27, 2005 (date of mailing), was issued from the International Searching Authority.

This Written Opinion indicated the opinion that the inventions described in Claims 1 to 4, 8 and 10 to 12 of the present Application lack inventiveness on the basis of Cited References 1 to 3, and the invention described in Claim 13 lacks novelty and inventiveness on the basis of Cited References 1, 2, and 4.

In response to the above, the present Applicant, on February 27, 2006, has submitted a Procedure Amendment based on Article 11 of the International Application Law to restrict the invention related to the International Application and hereby submits this Written Reply to reply to the above Written Opinion.

(2) Contents and Outline of the Amendment

The present Applicant has submitted an Amendment based on Article 11 of the International Application Law on the same

date as the present Written Reply. In outline, the contents of the Amendment are as follows.

a. "(3) a standing step of leaving the to-be-processed object, subjected to the second step, still in an indoor environment; and" of Claim 1 of page 34 was changed to "(3) a standing step of leaving the to-be-processed object, subjected to the second step, still in an indoor environment for a duration enabling progressing of aging of the to-be-processed object surface and adjustment of water content gradient;".

b. "(4) a water rinsing step of water rinsing the to-be-processed object, subjected to the standing step; (5) a water draining step of draining off water from the to-be-processed object, subjected to the water rinsing step; and" was added between (3) and (4) of Claim 1 of page 34.

c. Claim 8 of page 34 was deleted.

d. "(3) when a width direction cross-sectional shape of a noodle string is observed, a thinned portion is present." of Claim 13 of page 35 was changed to "(3) when a width direction cross-sectional shape of a noodle string after drying is observed, a thinned portion of concave form is present along the width direction at both of opposing surfaces; and"

e. "(4) when the width direction cross-sectional shape of the noodle string after reconstitution in hot water is observed,

the thinned portion has disappeared and a core is not left at the central portion of the noodle string." was added to Claim 13 of page 35.

It is hereby noted that these amendments have been made within a scope of matters recited in the initial Specification, etc., and matters obvious from such matters.

Amendment a: Clear descriptions concerning "the progressing of aging of the to-be-processed object surface and the adjustment of water content gradient" are provided in paragraph Nos. 0038, 0088, 0091, etc., of the initial Specification.

Amendment b: Clear descriptions concerning the "water rinsing step" are provided in the initial Claim 8 and paragraph Nos. 0040, 0093, 0094, etc., of the initial Specification. Also, clear descriptions concerning the "water draining step" are provided in paragraph Nos. 0097, 0098, 0099, etc., of the initial Specification.

Amendment d: That a "thinned portion of concave form is present across the width direction" is clearly described in paragraph Nos. 0176, 0179, 0180, 0190, 0191, 0192, etc., of the initial Specification. Furthermore, that the width direction cross sectional shape of a noodle string is a

"dumbbell-like shape" is described in paragraph No. 0176 of the initial Specification, and it is thus considered obvious to one skilled in the art that the presence of the thinned portion "at both of opposing surfaces" is equivalent to that which is described in the initial Specification.

These descriptions are also clear from the enlarged stereoscopic micrographs of FIGS. 3, 4, 6B, 7A, etc., of the initial Drawings.

Amendment e: That the "thinned portion" is expanded gradually by hot water reconstitution is clearly described in paragraph Nos. 0191 and 0193 of the initial Specification and in FIGS. 6C to 6H and 7B to 7D of the initial Drawings. By these descriptions and enlarged stereoscopic micrographs of 6H and 7D, it is considered obvious to one skilled in the art that the "disappearance" of the "thinned portion" is equivalent to that which is described in the initial Specification and Drawings.

That "a core is not left at the central portion of a noodle string after hot water reconstitution" is also clearly described in paragraph Nos. 0046, 0191, 0193, etc., of the initial Specification.

(3) On the inventiveness of the invention according to Claim

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The amended Claim 1 reads as follows:

1. (Amended) A method for manufacturing a dried food to be eaten after cooking or reconstituting in hot water,

the dried food manufacturing method being characterized in successively subjecting a to-be-processed object, obtained by processing a prepared object of a raw material containing starchy matter to a predetermined shape, to at least the following steps (1) to (6):

(1) a first step of subjecting the to-be-processed object to a boiling treatment;

(2) a second step of putting the boiled to-be-processed object in contact with an aqueous solution after the first step;

(3) a standing step of leaving the to-be-processed object, subjected to the second step, still in an indoor environment for a duration enabling progressing of aging of the to-be-processed object surface and adjustment of water content gradient;

(4) a water rinsing step of water rinsing the to-be-processed object, subjected to the standing step;

(5) a water draining step of draining off water from the to-be-processed object, subjected to the water rinsing step;

and

(6) a third step of subjecting the to-be-processed object, subjected to the water draining step, to a wind drying treatment at conditions of a temperature of 45 to 100°C and a humidity of 5 to less than 55%.

① On the differences among the inventions

a. Differences with respect to the invention described in Cited Reference 1

An invention of "a method of boiling a paste product in boiling water, etc., rapidly cooling the boiled product, immersing the cooled paste into an excess of immersion water to greatly expand the volume of the product, and drying the expanded paste product at no more than 99°C" is described in Cited Reference 1 (see the "Detailed Description of the Invention" and the "Claims" of Cited Reference 1).

The abovementioned Written Opinion indicates, "the step of expanding the volume by placing in water as described in Cited Reference 1 is admitted as being equivalent to 'standing'".

However, the specific inventive matters of the two inventions clearly differ in the point of "immersing in an excess of immersion water" and the point of "leaving still in an indoor environment."

Also with this invention, "leaving still in an indoor environment" is carried out to "make the aging of the to-be-processed object surface progress and adjust the water content gradient" and clearly differs in not being carried out for "expanding the volume."

Furthermore, by the present Amendment, "(4) a water rinsing step of water rinsing the to-be-processed object, subjected to the standing step; (5) a water draining step of draining off water from the to-be-processed object, subjected to the water rinsing step;" were added to the contents of Claim 1, and these steps are neither described nor suggested in Cited Reference 1.

b. Differences with respect to the invention described in Cited Reference 2

An invention of "a method of solidifying raw noodles, etc., by boiling for a short time, then upon water rinsing or not water rinsing, making edible oil become attached to the partially solidified object as necessary, and drying by a hot wind of a temperature no less than the solidification temperature of starch" is described in Cited Reference 2 (see the "Claims" and the "Detailed Description of the Invention" of Cited Reference 2).

The abovementioned Written Opinion indicates, "the state of noodles between the water rinsing treatment and the drying treatment steps described in Cited Reference 2 is admitted as being equivalent to "the step of leaving still in an indoor environment" of Claim 1". The Written Opinion also indicates, "the switching from the water rinsing treatment to the drying treatment cannot be admitted to take place instantaneously, and it is admitted that because water draining, etc., are performed, a step of leaving still, even for a few seconds, is carried out between the treatments".

However, because by the present Amendment, the standing step in this invention is restricted to being carried out "for a duration enabling progressing of aging of the to-be-processed object surface and adjustment of water content gradient," it is a step that clearly differs from the interval between the water rinsing treatment and drying treatment steps as well as from water draining, etc., in Cited Reference 2.

Also because the "(4) water rinsing step" and "(5) water draining step" were added by the Amendment, it has been made clear that the "standing step" and the "water draining step" in the present invention are not the same.

② Advantageous effects compared to the cited inventions

a. On the standing step of leaving still in an indoor environment for a duration enabling progressing of aging of the to-be-processed object surface and adjustment of water content gradient

As a result of making the surface of the to-be-processed object age appropriately, the advantageous effect that mutual sticking of surface portions of the to-be-processed object can be prevented effectively is provided (see paragraph Nos. 0038, 0088, etc., of the Specification).

Also by adjusting the water gradient to be small between the surface and the central portion of the to-be-processed object, the advantageous effect of making a difference arise in the progress of drying between the surface and the central portion of the to-be-processed object and thereby forming a new form of noodle string, to be described below, is provided (see paragraph No. 0082, etc., of the Specification).

b. On the water rinsing step

In the water rinsing step, a flow of water is made to act on the to-be-processed object to enable "unraveling" of the to-be-processed object (see paragraph No. 0095, etc., of the Specification).

This "unraveling effect" furthermore provides the

advantageous effect that the passage of air through the to-be-processed object is improved to further improve the wind drying efficiency in the third step, that is, the wind drying step.

The advantageous effect of promoting the improvement of the "unraveling property" at the point of being eaten after hot water reconstitution or hot water cooking is also provided (see paragraph No. 0096 of the Specification).

c. On the water draining step

In the water draining step, the water present in gaps of the to-be-processed object and excess water attached to the surface of the to-be-processed object can be removed.

The removing of water provides the advantageous effect of improving the wind drying efficiency in the third step, that is, the wind drying step (paragraph No. 0099 of the Specification).

③ On Cited Reference 3

In the abovementioned Written Opinion, an admission concerning the humidity in the inventions of Cited References 1 and 2 is made from the description of the conventional art in Cited Reference 3.

However, as described above, the inventiveness of the present invention cannot be denied based on the inventions described in References 1 and 2, and even if the "humidity condition" described in Cited Reference 3 is combined, the inventiveness still cannot be denied. This is because, a characteristic of the art of the present invention lies in successively carrying out the steps (1) to (6), described in Claim 1, as a series of steps, the "standing step," the "water rinsing step," and the "water draining step" that were restricted by the Amendment are points of difference in particular with respect to the conventional art, and a characteristic of the art does not lie solely in "humidity."

It is also noted hereby that no description or suggestion is made concerning a "standing step," a "water rinsing step," and a "water draining step" in Cited Reference 3.

④ Summary

As described above, the invention according to Claim 1 has clear points of difference with respect to the inventions described in Cited References 1, 2, and 3, and that the present invention provides advantageous effects in comparison to the inventions described in Cited References 1, 2, and 3 can be ascertained clearly from the description in the Specification.

From the above, it is impossible to rationalize that one skilled in the art can readily arrive at the present invention based on the descriptions of Cited References 1, 2, and 3, and it is thus considered that the present invention is inventive.

(4) On the inventiveness of the inventions according to Claims 2 to 5 and 10 to 12

As described above, it is considered that the invention according to the amended Claim 1 is inventive.

Claims 2 to 5 and 10 to 12 are dependent claims of Claim 1 and restrict the contents of Claim 1 further.

Thus the inventions according to Claims 2 to 5 and 10 to 12, which are dependent claims of Claim 1, are considered to be inventive.

(6) On the novelty and the inventiveness of the invention according to Claim 13

Firstly, the amended Claim 13 reads as follows:

13. (Amended) Dried noodles having the following textural structure or form characteristics (1) to (4):

(1) voids are present concentratedly at an internal central portion of noodle string after drying;

(2) cracks are present dispersedly in a range extending from the central portion to a surface of the noodle strings after drying; and

(3) when a width direction cross-sectional shape of a noodle string after drying is observed, a thinned portion of concave form is present along the width direction at both of opposing surfaces; and"

(4) when the width direction cross-sectional shape of the noodle string after reconstitution in hot water is observed, the thinned portion has disappeared.

① On the differences among the inventions

a. On the manufacturing process

The abovementioned Written Opinion indicates, "because the noodles described in Reference 1 and Reference 2 are manufactured by the same manufacturing process as that according to Claim 1, these noodles are also the same in arrangement as the noodle according to Claim 13".

However, as mentioned above, the manufacturing process according to Claim 1 differs from the manufacturing processes of References 1 and 2 and is novel and inventive.

The noodles described in Reference 1 and Reference 2 are thus manufactured by manufacturing processes that differ from

the manufacturing process according to Claim 1 and thus cannot be considered to be the same in arrangement as the dried noodle described in Claim 13.

b. On voids, cracks, and thinned portion

The abovementioned Written Opinion indicates, "It is admitted that dried noodles having a thinned portion and voids are described in Reference 4. Though there is no description concerning cracks, because the noodles are porous and structurally fragile, it is admitted that there are some cracks."

Though the voids of the dried noodles described in Cited Reference 4 are admitted to be "present dispersedly in the entire interiors" (see Drawings of Cited Reference 4), the voids of the dried noodles according to the present invention are admitted as being present "concentratedly at an internal central portion" (see FIG. 3 and FIG. 4).

Also, the "cracks" of the noodle string according to the present invention are present from the central portion to the surface. Even if some cracks are present in the noodle strings of Cited Reference 4 as described in the abovementioned Written Opinion, unless these cracks are present from the central portion to the surface, the effects described below cannot be anticipated.

Furthermore, a thinned portion in the cross section cannot be seen in the electron micrograph of FIG. 1 of Cited Reference 4. Also, noodle strings, in which a thinned portion is formed "intentionally" has not heretofore existed among known dried noodles. Even if a "thinned portion" is provided by chance, it is considered that a concave thinned portion at "both of opposing surfaces" cannot be recognized. This is because the "thinned portion" is formed not by chance but by a difference arising in the progress of drying between the surface and the central portion of the noodle string, due to the to-be-processed object, which has been made, through a series of steps, to be small in the water content gradient between the surface and the central portion, being wind dried under conditions of low humidity and medium to high temperature range so that the surface, at which drying progresses quickly, solidifies at once ahead of the central portion and the internal portion is put in a depressurized state and deforms in the manner of being squashed by atmospheric pressure when water becomes removed from the central portion that is slow in the progress of drying (see paragraph No. 0179 of the Specification).

Also, the "intentional" forming of the "thinned portion," which may at first be considered as making the appearance and texture poor, is an important element of the present invention

that the present inventor has developed through diligent research to obtain the effects to be described below, .

c. On the disappearance of the thinned portion and a core not being left in the central portion of a noodle string after hot water reconstitution

Though by the present Amendment, the restriction that the "thinned portion has disappeared" is placed in regard to the shape of a noodle string after hot water reconstitution, no description or suggestion is made concerning the "disappearance of the thinned portion" in Reference 4. Also, though a description concerning texture and flavor is admitted, there is no clear description concerning whether or not a "core" remains at the central portion of a noodle string after hot water reconstitution.

As described in the "Detailed Description of the Invention" of Cited Reference 4, it was common for one skilled in the art to carry out research and development in regard to how water can be made to be absorbed uniformly in the process of hot water reconstitution. Thus, though a noodle string may expand or contract in size before drying, after drying, and after hot water reconstitution, it is considered that the common knowledge of the art was that the noodle string has the same

shape in all of these steps.

However, the present inventor has made a large change in thinking in that, from the state of the noodle string before treatment, a series of treatments are performed to form the abovementioned "voids" and "cracks" and carry out "aging of the noodle string surface" and "deformation of the noodle string surface shape," in other words, forming of the "thinned portion" at opposing surfaces, which was heretofore considered negatively by the common knowledge of the art. Thus water is not made to be absorbed uniformly but water is made to be absorbed more into the "voids" that are concentrated at the central portion via the "cracks" from the thin, deep central portion so that the "thinned portion" disappears and a "core at the central portion" is not left after hot water reconstitution.

Even if dried noodles with a "thinned portion" exist, unless the noodles are provided with the other tissue structure or form characteristics of the present invention, the noodles will absorb water and expand with the shape having the thinned portion being retained even after hot water reconstitution. Such noodles having such a "thinned portion" even after hot water reconstitution is not fit for eating.

On the other hand, with the present invention, because of being provided with the tissue structure or form

characteristics (1) to (3) described in Claim 13, the "thinned portion" disappears and a smooth surface is formed after hot water reconstitution.

② Advantageous effects compared to the cited inventions

a. On the voids concentrated at the central portion and the cracks present from the central portion to the surface

It is indicated that because the voids of the dried noodles described in Cited Reference 4 are present dispersedly in the entire interiors, hot water is absorbed uniformly across the entirety in the hot water reconstitution process (see Detailed Description of the Invention of Cited Reference 4).

However, it is clearly described that because the voids of the dried noodles according to the present invention are present concentratedly at the internal central portion, hot water permeates, in the hot water reconstitution process, towards the central portion by the capillary phenomenon, etc., via the numerous cracks formed in the range from the central portion to the surface (see paragraph No. 0182, etc., of the Specification).

Thus even if some "cracks" do exist in the noodle strings of Cited Reference 4 as indicated by the abovementioned Written Opinion, it is considered that unless these "cracks" are formed

so as to be present from the central portion to the surface, hot water will not permeate towards the central portion by the "capillary phenomenon, etc."

It is also clearly described in the present invention that as a result of hot water: permeating to the central portion by the capillary phenomenon, etc., a core is not left at the central portion of the noodle string after hot water reconstitution (see paragraph No. 0046, etc., of the Specification).

Also because by having voids concentrated at the central portion and cracks present from the central portion to the surface, water reaches the central portion rapidly, the characteristic that hot water reconstitution of the noodle is made fast both at the surface and the central portion is provided. That is, the advantageous effect that hot water reconstitution is fast even with a thick noodle is provided.

The advantageous effect that when dried noodle strings having the voids and the cracks are hot water reconstituted, the "texture" and the "unraveling property" are extremely good is furthermore described (see paragraph No. 0168, etc., of the Specification).

The voids of the dried noodle strings described in Cited Reference 4 are also present numerously on the noodle string

surface. This can be recognized clearly by seeing FIG. 1 in Cited Reference 4. When voids are thus present numerously on the noodle string surface, the noodle string surface roughens after hot water reconstitution and a smooth texture cannot be obtained.

However, the voids of the noodle strings according to the present invention are concentrated at the central portion. This can be recognized clearly by seeing FIG. 3 and FIG. 4. The advantageous effect that the noodle string surface is made smooth and a good texture is provided after hot water reconstitution is thus provided.

b. On the concave thinned portion that is present across the width direction at both of opposing surfaces

By the presence of the thinned portion, the advantageous effect that the surface area of the noodle string as a whole is made large and the efficiency of contact of the noodle string with hot water in the hot water reconstitution process is improved significantly is provided (see paragraph No. 0181, etc., of the Specification).

Also by the presence of the thinned portion, the advantageous effect that the transfer of heat and the permeation of hot water into the thin, deep central portion are promoted

and the restoration of the texture is made rapid is provided (see paragraph Nos. 0045, 0181, etc., of the Specification).

c. On the thinned portion disappearing and a core not being left in the central portion of the noodle string after hot water reconstitution

It is considered that if in the process in which the dried noodle string having the "thinned portion" absorbs water and swells, the entirety simply swells with the "thinned portion" being provided as it is, the surface of the noodle string will not be smooth and the texture will be poor due to the noodle string having a shape in which the center is depressed.

However, the present invention provides the advantageous effect that, after hot water reconstitution, the thinned portion of the noodle string disappears, that is, the thinned portion swells more greatly than the other portions so that a smooth surface is formed and a good "texture" is obtained.

The above-described phenomenon is considered to occur not only due to the presence of the "thinned portion" but also due to the presence of the "voids concentrated at the central portion" and the "cracks formed so as to be present from the central portion to the surface."

Also by a core not being left in the central portion of

the noodle string, the advantageous effect that a good "texture" can be obtained at the central portion of the noodle string in addition to the smooth texture of the surface is provided.

As mentioned above, when normal noodles of a structure with which water is absorbed uniformly (noodles that do not have a thinned portion and with which voids are not concentrated at the central portion) is reconstituted in hot water appropriately, a core will be left at the central portion, and oppositely if water is absorbed to a degree such that a core is not left at the central portion, the noodles will be in an over-softened state and become unfit for eating.

However, by being provided with all of the above-described structures, the noodle strings according to this invention provide the advantageous effect that good texture is obtained at both the surface and the central portion by the disappearance of the thinned portion and a core not being left at the central portion after hot water reconstitution.

③ Summary

As described above, the invention according to Claim 13 has clear points of difference with respect to the inventions described in Cited References 1, 2, and 4, and that the present invention provides advantageous effects in comparison to the

inventions described in Cited References 1, 2, and 4 can be ascertained clearly from the description in the Specification.

From the above, it is impossible to rationalize that one skilled in the art can readily arrive at the present invention based on the descriptions of Cited References 1, 2, and 4, and it is thus considered that the present invention is novel and inventive.

(8) Conclusion

As explained above, it is considered certain that the present invention after amendment is an invention that meets the requirements of novelty and inventiveness. It is requested that the above points be taken into account and an International Preliminary Examination Report indicating the examination result that this invention has novelty and inventiveness be prepared.